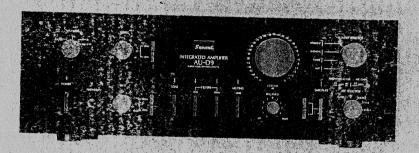
SERVICE MANUA

INTEGRATED STEREO AMPLIFIER

SANSUI AU-D9





SANSUI ELECTRIC CO., LTD

SPECIFICATIONS

Power output	

Min. RMS both channels driven, from 10 to 20,000 Hz, with no more than 3.005 % total harmonic distortion.

95 watts per channel into 8 ohms ad impedance

Load Impedance
Total harmonic distortion

Total harmonic distortion less than 0,005 % at or below rated, min. RMS power output Intermodulation distortion (60 Hz . 7 kHz = 4;1.5MRTE method) less than 0,005 % at rated

power output

Frequency response (at 1 watt)

Overall (from AUX) DC to 300,000 Hz +0 dB.

-3.0 dB -3.0 dB RIAA curve deviation (PHONO-MM, 20 Hz to 20 kHz) +0.2 dB, -0.2 dB 0.8 μsec

Rise time ± 200 V/µsec Damping factor (1 kHz, both channels driven)

150 into 8 ohms

Input sensitivity and Impedance (at 1 kHz)
PHONO-1, 2 (MC)

HIGH 100 µV/LOW 250 µV/

100 ohms

(Max, input capability: 20 mV at 1 kHz, less than 0.01 % total

harmonic distortion) PHONO-1, 2 (MM)

2.5 mV/47 kilohms (Max. input capability; 200 mV at 1 kHz, less than 0.01 % total harmonic distortion)
AUX. TUNER, TAPE PLAY-1, 2. 250 mV/27 kilohms
O tiput level and impedance (1,000 Hz)

TAPE REC-1.2

250 mV into 47 kilohms/ 600 ahms

80 aB 74 dB

90°dB AUX, TUNER, TAPE PLAY-1.2 110 aB Controls

BASS +808. -8 dd at 50 Hz Tone selector 150 Hz, 300 Hz +8 dB, -8 dB at 15 kHz 3 kHz, 6 kHz TREBLE Tone selector

Fiiter 16 Hz

-3 dB at 16 Hz (6 dB/oct) -3 dB at 20 kHz (6 dB/oct) -20 dB 20 KH2 MUTING

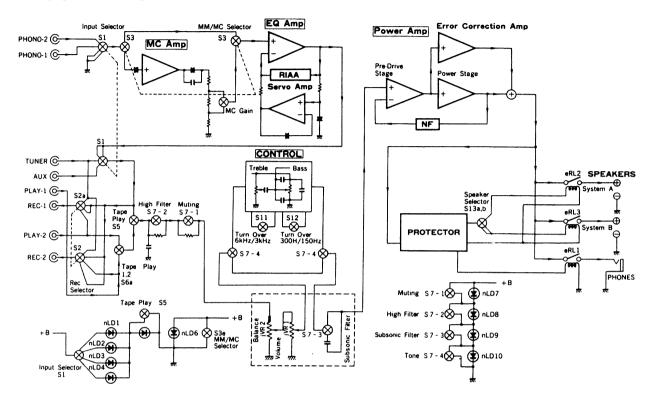
Power requirements
Power voltage
For U.S.A. & Canada
Power consumption 100, 120, 220, 740 V (50/60 Hz) 120 V (60 Hz)

Rated consumption 520 watts 650 VA 445 mm (17.9/16") W 163 mm (6-7/16") H Dimensions . . .

403 mm (15-7/8") D 13.7 kg (30,2 lbs) net Weight 15.4 kg (34.0 lbs) packed

- Design and specifications subject to changes without notice for
- improvements.
 In order to simplify the explanation illustrations may sometimes differ from the originals.

1. BLOCK DIAGRAM



2. OPERATION

2-1. Super Feedforward Amplifier

This amplifier was developed by combination of conventional negative feedback and feedforward techniques.

This feedforward technique helps to eliminate distortions which can not be achieved by the NFB.

The feedforward technique is a technique to nullify, in principle, all types of distortions at the output point by adding distortions of reverse phase but of equal amplitude as those generated in the power amplifier.

The NFB makes use of distortion generated by the output stage and feeds it back to the input, the output stage is bound to have distortion. Therefore, in order to reduce distortion to zero an infinite amount of NFB is required and as a result an amplifier of infinite gain becomes necessary, which is not available in reality.

On the other hand, the feedforward is unlike NFB, finite amount of feedforward can theoretically reduce distortion to zero over a wide frequency range as the feedforward amount does not have to be reduced at higher frequencies.

2-2. Operation of Super Feedforward Amplifier

Fig. 2-2 shows a block diagram of super feedforward amplifier. This circuit consists of voltage amplifier (A1), power amplifier (A2), error correction amplifier (A3) and summing network (Z1 & Z2).

Distortion marked A is generated by A2 and reverse phased distor-

Distortion marked Λ is generated by A2 and reverse phased distortion is produced by NFB and fed to A2 and A3.

Reverse phased distortion fed to A2 reduces the form of distortion after NFB and reverse phased distortion fed to $\dot{\rm A3}$ is amplified without phase changing.

Fig. 2-1. Shows how distortions can be nulled by application of feedforward.

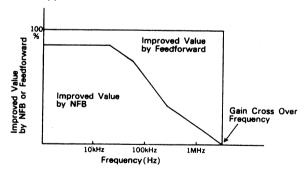


Fig. 2-2.

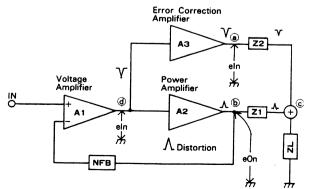


Fig. 2-3 shows distortion voltage (eOn) at point (a) and (eln) at point (a). When these two distortions are added by summing network (Fig. 2-4), complete cancellation from DC to gain cross over frequency is achieved.

The component values of the summing network are decided by both the loop gain of NFB amplifier and the cut-off frequency of phase compensating circuit.

Error correction amplifier

Error correction amplifier A3 produces very small power required for distortion cancellation in the summing network.

For example, if the 100 W amplifier generates 1% distortion, the power is only 10 mW. Therefore, small type of amplifier is used as error correction amplifier. On the actual super feedforward amplifier (Fig. 2-5), L is associated with Lx as mutual-coupling for low power driving of the error correction amplifier, and R4 is substituted by internal resistance of L.

Fig. 2-3. Distortion value VS. Frequency at point (a) and (b).

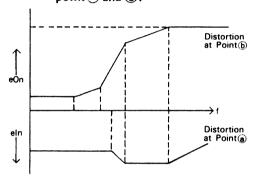


Fig. 2-4. Summing Network

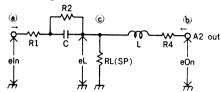
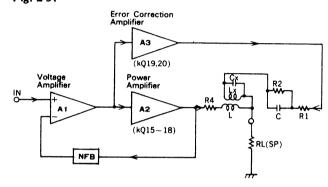
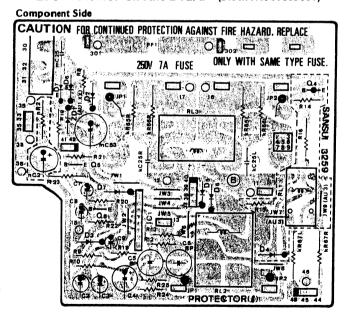


Fig. 2-5.



3. PARTS LOCATION & PARTS LIST

3-1. F-3259 Protector Circuit Board (Stock No. 07083601)



—● Abbreviations————	
C.R	E.L. Low Leak Electrolytic Capacitor E.B. Bi-Polar Electrolytic Capacitor E.BL. Low Leak Bi-Polar Electrolytic Capacitor
F.R. Fusing Resistor N.I.R. Non-Inflammable Resistor C.C. Ceramic Capacitor C.T. Ceramic Capacitor, Temperature	Ta.C. Tantalum Capacitor F.C. Film Capacitor M.P. Metalized Paper Capacitor P.C. Polystyrene Capacitor
Compensation E.C. Electrolytic Capacitor	G.C Gimmic Capacitor

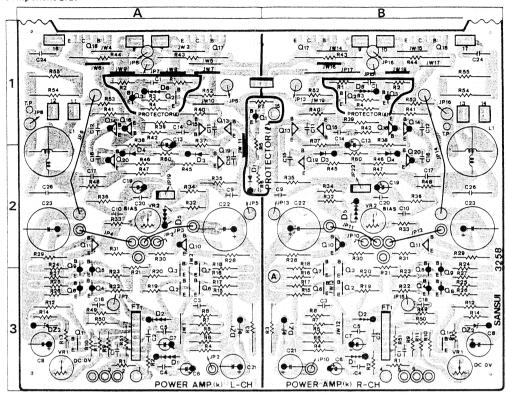
 Since some of capacitors and resistors are omitted from parts lists in this Service Manual, refer to the Common Parts List for capacitors & resistors which was appended previously to each Sansui Manual.

Parts List

Parts No.	Stock No.	Description
kR65	00187700	22Ω 2W N.I.R.
k R66	00187700	22Ω 2W N.I.R.
kR67	00187800	220Ω 2W N.I.R.
kC25	00411600	0.047μF 400V P.C.
●Transistor		
IQ4	07197001,2	2SA733A Q,P
IQ5	03059502,3	2SC945 P.K
106	03059502,3	2SC945 P, K
●IC		
IIC1	03069000	HA12002
●Diode		
ID2	03111600	1S2473D
ID3	03111600	1S2473D
ID4	03117700	10E-2
IR19	00181800	2.7kΩ 1W N.I.R.
IC5	00302600	100µF 6.3V E.B.
IC6	00302600	100µF 6.3V E.B.
IRL1	11506200	Relav
IRL2	11504800	Relay
IRL3	07198400	Relay
●Diode		
mD6	07112300	10DF-2
mD7	07112300	10DF-2
	07203600	8P Terminal, speaker
pF1	07189000	Fuse 250 V 4A (220 V ~ 240 V)
•	07189400	Fuse 250 V 8A (100 V ~ 120 V)

3-2. F-3258 Power Amp Circuit Board (Stock No. 07084001)

Component Side



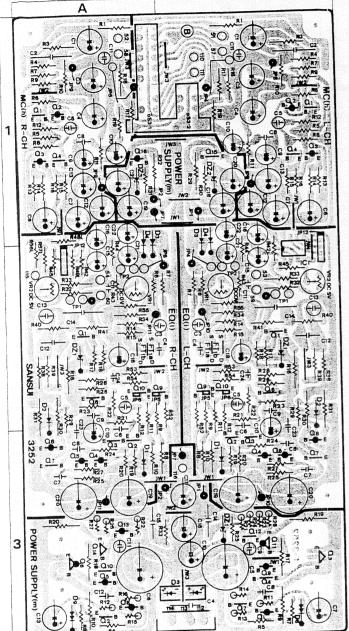
Parts List

Parts No.	Stock No.	Description	
Transistor	•		The second
kQ1	03067400,1	2SC1845 F, E	
kQ2		2SC1845 F, E	
kQ3		2SC1845 F, E	
kQ4	03010900, 1	2SA992 F,E	
kQ5	03010900 1	2SA992 F F	
kQ6		2SC1845 F, E	
kQ7		2SC1845 F, E	
kQ8	03010900,1	2SA992 F,E	
kQ9	03010900,1	2SA992 F,E	
kQ10		2SA899 B, V	
kQ11	03064001,2	2SC1904 B, V	
kQ13	03064001,2	2SC1904 B, V 2SA899 B, V	
kQ14	03007901,2	2SA899 B, V	
kQ15	03069300,1	2SC2238 O, Y	
kQ16	03012400,1	2SA968 O, Y 2SC2773LB O, Y	
kQ17	07260200, 1	2SC27/3LB 0, Y 2SA1169LB 0, Y	
kQ18	0/260100,1	2SA1169LB O, Y	
kQ19		2SC2238 O, Y 2SA968 O, Y	
kQ20	03012400,1	25A906 U, 1	
eFET kFT1	03703601~4	µРА68H L1, L2, M1, M2	
		•	
Varistor			
kD1	03401700	MV-103	
kD2	03401700	MV-103	
Diode			
kD3	03111600	1S2473D	
kD4	03111600	1S2473D	
•Zener Dic	nde		
kDZ1	03171900	RD27F B	
kDZ2		RD33E B	
. 50		1010 0011 1110	
kR3	00187400	1.8kΩ 2W N.I.R.	
kR43	07221600		
kR44	07221600	0.22Ω 5W Ce.R. 22Ω 2W N.I.R.	
kR54	00187700 00187700	22Ω 2W N.I.R.	
kR55	00167700	2236 ZVV IV.I.M.	

-		
Parts No.	Stock No.	Description
kC1 kC2 kC4 kC5 kC9 kC10 kC11 kC12	00371200 00371200 00407400 00407400 00403800 00403800 00371700 00371700	22pF 125V P.C. 22pF 125V P.C. 0.033µF 100V F.C. 0.033µF 100V F.C. 0.001µF 100V F.C. 0.001µF 100V F.C. 33pF 125V P.C. 33pF 125V P.C. 0.0047µF 100V F.C.
●Varistor kD5	03401601,2	STV-3H Y, G
kC15 kC16 kC17 kC18 kC20 kC21 kC22 kC23 kC24 kC26	00370100 00370100 00411300 00411300 00407800 07262600 07262700 00411600 00410300	10pF 125V P.C. 10pF 125V P.C. 33pF 125V P.C. 33pF 125V P.C. 0.047µF 100V F.C. 100µF 50V E.C. 470µF 100V E.C. 470µF 100V E.C. 0.047µF 100V F.C. 0.47µF 250V F.C.
kL1	07210700	Inductor
kVR1	10341500	100 Ω (B) Volume, center DC 0V adj. 1k Ω (B) Volume, bias current adj.
Transistor IQ1 IQ2 IQ3	03010900, 1 03065200~2 07219800~2	2SC1439 G, B, V
•Diode ID1 ID5 ID6 ID7	03111600 03117700 03117700 03111600	1S2473D 10E-2 10E-2 1S2473D
●Varistor ID8	03401700	MV-103

3-3. F-3252 Equalizer Amp & Power Supply Circuit Board (Stock No. 07083901)

Component Side

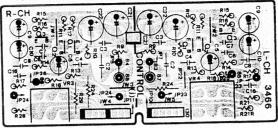


D.		List
P 2	ILIZ	LIS

Parts List		
Parts No.	Stock No.	Description
•Transistor	A STATE OF THE STA	
hQ1	03068500,1	2SC1844 F, E
hQ2	03011700,1	2SA991 F, E
nQ3	03010900, 1	2SA992 F, E
hQ4	03067400, 1	2SC1845 F, E
hC1	00324500	220µF 25V E.L.
hC2	00407800	0.047µF 100V M.P.
hC8	00407800	0.047µF 100V M.P.
Transistor	03067400,1	2SC1845 F, E
iQ1	03067400, 1	2SC1845 F, E
iQ2	03067400, 1	2SC1845 F, E
iQ3		2SA992 F, E
iQ4	03010900,1	2SA992 F, E
iOS	03010900.1	43M334 1, -

irts No.	Stock No.	Description
iQ6 iQ7 iQ8	03067400, 1 03064001, 2 03007901, 2	2SC1904 B, V
ET iFT1	03703500	2SK146
IC IIC1	03607700	NJM4558D
Diode iD1 iD2 iD3 iD4	03111600 03111600 03111600 03111600	1S2473D 1S2473D 1S2473D 1S2473D
Zener Dioc iDZ1	de 03163200	RD13E C
iR39 iR40 iR41	00216900 00222900 00216500	2.2kΩ 1/2W M.R. 6.8kΩ 1/2W M.R. 20kΩ 1/2W M.R.
iC4 iC6 iC7 iC8 iC9 iC11 iC12 iC14 iC23	00371200 00370100 00370100 00371700 00371700 00405200 00413900 00414500 00407800	22pF 125V P.C. 10pF 125V P.C. 10pF 125V P.C. 33pF 125V P.C. 33pF 125V P.C. 0,0039µF 100V M.C. 0,033µF 100V M.P. 0,056µF 100V M.P. 0,047µF 100V M.P.
iVR1 iVR2	10341500 10342500	100Ω (B) Volume, DC 0V adj. $4.7k\Omega$ (B) Volume, DC Servo 0V adj.
mQ1 mQ2 mQ3 mQ4 mQ5 mQ6 mQ7 mQ8 mQ9 mQ10 mQ11 mQ12 mQ13 mQ14 mQ15 mQ16	03010900, 1 03067400, 1 03084500, 1 03086101, 2 03067400, 1 03010900, 1 03032800, 1 03034401, 2 03067400, 1 03010900, 1	2SC1845 F.E 2SD356 C,D 2SD357 D,E 2SC1845 F,E 2SA992 F,E 2SB526 C,D 2SB527 D,E 2SC1845 F,E 2SA992 F,E 2SA992 F,E 2SC1845 F,E 2SB526 C,D 2SC1845 F,E 2SB526 C,D 2SC1845 F,E 2SA992 F,E 2SA992 F,E 2SA992 F,E
•Diode mD3	07193300	UB-152LFF
•Varistor mD8 mD9	03401500 03401500	MV-12 MV-12
Zener DmDZ1mDZ2mDZ3	03163100 03163300 03163300	RD13E B RD15E B RD15E B
mC4 mC8 mC12 mC14 mC15	00411800 00407800 00407800 07255800 07255800	0.1μF 250V M.P. 0.047μF 100V M.P. 0.047μF 100V M.P. 0.22μF 200V M.P. 0.22μF 200V M.P.
oS3	07219000	Push Switch, phono mc gain

3-4. F-3466 Bass, Treble Volume Circuit Board (Stock No. 00633501)



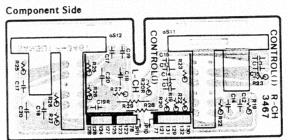
Parts List		
Parts No.	Stock No.	Description
•Transistor	03067400 1	2SC1845 F,E

Parts List

Parts No.	Stock No.	Description
iQ2	03067400,1	2SC1845 F, E
j03	03010900,1	2SA992 F,E
iC2	00409800	0.33µF 100 ∨ M.C.
iC3	00371700	33 pF 125 V P.C.
iC4	00407800	0.047µF 100 V M.C.
iC6	00371200	22 pF 125 V P.C.
iC7	00370100	10 pF 125 V P.C.
iC8	00407800	0.047µF 100 V M.C.
jC16	00371400	27 pF 125 V P.C.
iVR3	07271700	Variable Resistor 100 kΩ (C)
jVR4	07271700	Variable Resistor 100 k Ω (C)
oS11	07271600	Push Switch
oS12	07271500	Push Switch

• Note: The circuit board, F-3249, F-3253, F-3239, F-3240, F-3246, F-3250, F-3251, F-3255, F-3467, F-3257, F-3260, F-3261, F-3382 & F-3383 are not supplied as the assembled. However, the individual parts on the circuit board are provided by orders.

3-5. F-3467 Turn-over Circuit Board



Parts List		
Parts No.	Stock No.	Description
iC12	00404200	0.0015µF 100 ∨ M.C.
iC13	00406000	0.0082µF 100 V M.C.
iC14	00404000	0.0012µF 100 V M.C.
iC15	00405800	0.0068µF 100 V M.C.
iC17	00406600	0.015µF 100 V M.C.
iC18	00408400	0.082µF 100 ∨ M.C.
iC19	00406600	0.015µF 100 V M.C.
iC20	00408400	0.082µF 100 V M.C.

3-6. F-3249 Input Termianl Circuit Board

Paris List		
Parts No.	Stock No.	Description
nR1	00182800	3.9kΩ 1W N.I.R.
oS1	07219600	Rotary Slide Switch, input selector
oS2	07219500	Rotary Slide Switch, rec selector
	22006300	4P Input Terminal, phono-1, 2
	22006200	4P Input Terminal, tuner, aux
	22006500	4P Input Terminal, tape-1, 2

3-7. F-3253 Control Circuit Board

Parts List			
Parts No.	Stock No.	Description	
jC1 jC7	00404800 00408000	0.0027μF 100V M.C. 0.056μF 100V M.C.	
jVR2	07218200	$250k\Omega$ (MN) Volume, balance	
oS7	07271800	Push Switch, tone, low/high-filter, muting	

3-8. F-3239 Tape-Play Switch Circuit Board

1 4113 6131			
Parts No.	Stock No.	Description	
oS2	07218700	Push Switch, tape play (on, off)	

3-9. F-3240 Tape-Play 1/2 Selector Switch Circuit Board

Tails cist			
	Parts No.	Stock No.	Description
	oS3	07218900	Push Switch, tape play (play-1, 2)

3-10. F-3246 Bias Compensating Circuit Board

Parts No.	Stock No.	Description
•Transistor kQ12	03067400,1	2SC1845 F,E

3-11. F-3255 Master Volume Unit Circuit Board

fatts cist		
Parts No.	Stock No.	Description
jVR1	07218100	$100k\Omega$ (S) x 2 Volume, master

3-12. F-3257 Muting, Subsonic, Tone-Indicator Circuit Board

Parts List

Parts No.	Stock No.	Description
	07581900	1P L.E.D. Holder
nLD7 nLD8 nLD9 nLD10	03193700 03193700 03193700 03193700	SEL1110S SEL1110S SEL1110S SEL1110S
nR2	00182800	3.9kΩ 1W N.I.R.

3-13. F-3250 Head Phone Jack Circuit Board

Parts No.	Stock No.	Description	
	24306000	Head Phone Jack	

3-14. F-3251 Speakers Switch Circuit Board

Parts List

Parts No.	Stock No.	Description
oS13	07219400	Rotary Switch, speaker selector

3-15. F-3260 Power Indicator Circuit Board

Parts List

Parts No.	Stock No.	Description
	07581900	1P L.E.D. Holder
●LED nLD11	03193700	SEL1110S

3-16. F-3261 Input Indicator Circuit Board

arts No.	Stock No.	Description
	07581900	1P L.E.D. Holder
•LED		
nLD1	03193700	SEL1110S
nLD2	03193700	SEL1110S
nt D3	03193700	SEL1110S
nLD4	03193700	SEL1110S
nLD5	03193700	SEL1110S
nLD6	07246200	SEL1710K

3-17. F-3382 Rectifier Circuit Board (L-ch)

Parts No.	Stock No.	Description
•Diode mD4 mD5	03112900 03113000	SS-3 SS-3R
mR69 mR70	00190300 00190300	4.7kΩ 2W N.I.R. 4.7kΩ 2W N.I.R.

3-18. F-3383 Rectifier Circuit Board (R-ch)

Parts List

Parts No.	Stock No.	Description
Diode		
mD4	03112900	SS-3
mD5	03113000	SS-3R
mR69	00190300	4.7kΩ 2W N.I.R.
mR70	00190300	4.7kΩ 2W N.I.R.

4. ADJUSTMENTS

- Notes: 1. Before adjusting, set the unit in horizontally.
 - 2. Level Volume Minimum
 - (65°F ~ 83°F) 4. For this adjustment, run the unit for more than 3 min-

utes after the power is switched ON. 4-1. F-3258 Driver Circuit Adjustment (See Top View)

F-3252 L-CHr-ch(DC OV) R-ch(DC servo

Fig. 4-1

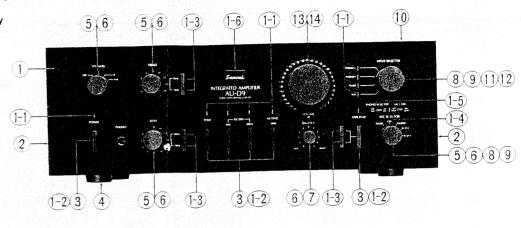
	Circuit	MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS	
TEP	SUBJECT	MEASURE COTT CT			Before turning ON power switch, set	
1.	DC 0V Adj. L-CH	Speaker terminal	kVR1, L-ch (F-3258)	DC 0V	kVR1 to center position.	
2.	DC 0V Adj. R-CH	Speaker terminal	kVR1, R-ch (F-3258)	DC 0V		
3.	Bias current Adj. L-CH	Between emitters of power transistors, kQ17 & kQ18 (between © & 🕀)	kVR2, L-ch (F-3258)	DC 10 mV	Before turning ON power switch, turk kVR2 fully counterclockwise. This bit current adjustment converts current value into voltage by Ohm's law.	
4.	Bias current Adj.	Between emitters of power transistors, kQ17 & kQ18 (between () & ())	kVR2, R-ch (F-3258)	DC 10 mV		

4-2. F-3252 Equalizer Circuit Adjustment (Fig. 4-1)

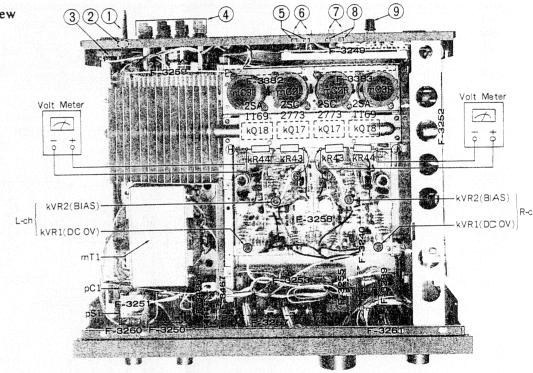
- 1		MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
TEP	SUBJECT		 		Connect Point © to Point (GND)
1.	DC 0V Adj. L-CH	Between Point (B) & Point (A) (GND)	iVR1, L-ch (F-3252)	DC 0V	
	L-Ci1			DC 0V	Connect Point (F) to Point (D) (GND)
2.	DC 0V Adj. R-CH	Between Point (E) & Point (D) (GND)	iVR1, R-ch (F-3252)	Deav	
3.	DC 0V Adj. L-CH (Servo)	Between Point (B) & Point (A) (GND)	iVR2, L-ch (F-3252)	DC 0V	
4.	DC 0V Adj. R-CH (Servo)	Between Point (E) & Point (D) (GND)	iVR2, R-ch (F-3252)	DC 0V	

5. OTHER PARTS

5-1. Front View



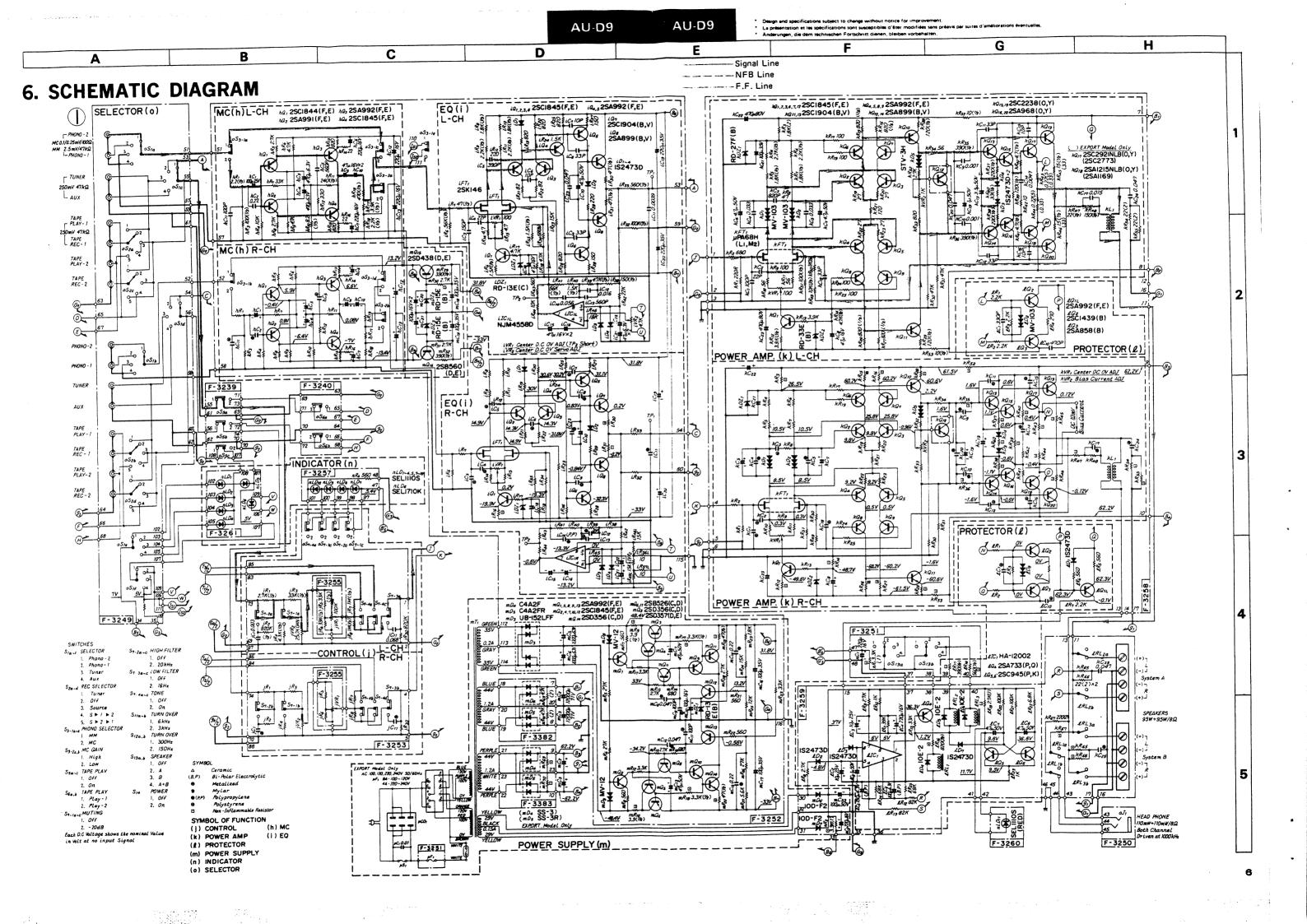
5-2. Top View

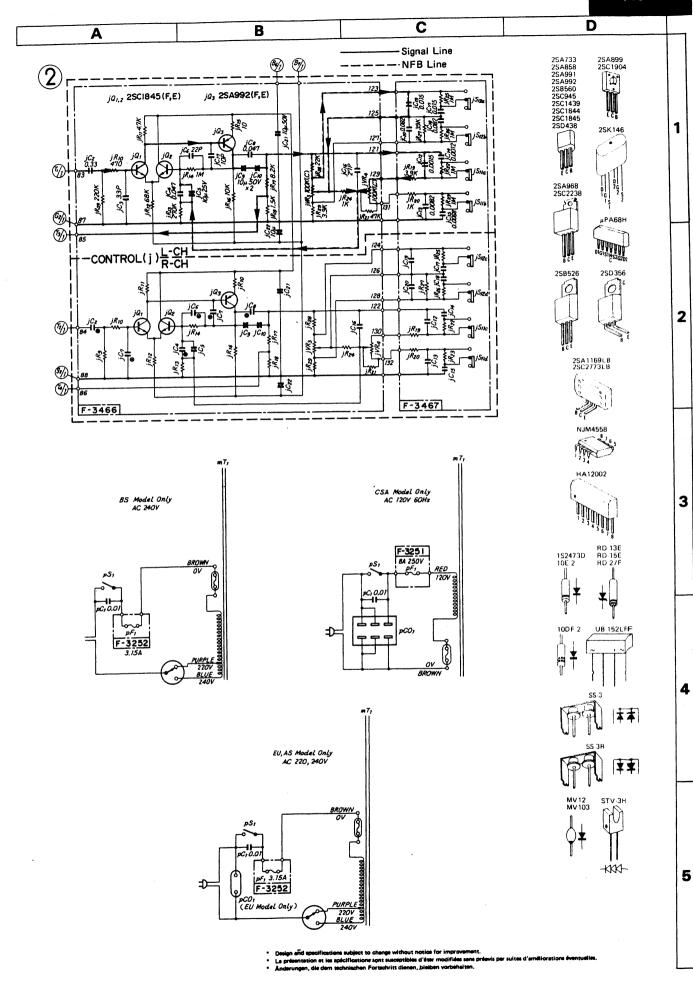


Parts No.	Stock No.	Description
1	07575700	Front Panel Ass'y
1-1	07578000	Indicator Plate, red
1-2	07581200	Push Knob Guide, power, tone, filters, muting, tape play
1-3	07578400	Push Knob Ass'y, 6/3 kHz, 300/ 150 Hz, tape play 1/2
1-4	07578100	Indicator Plate, green
1-5	71061500	Push Knob Ass'y, phono selector, MC gain
1-6	07582700	Sansui Badge
2	07571200	Side Panel
3	07580500	Push Knob, power, tone, filters, muting, tape play
4	55073500	Leg
5	07520900	Knob, speakers, treble, bass, rec selector
6	07595300	Masking Sheet (D), speakers, treble, bass, balance, rec selector
7	07521000	Knob, balance VR
8	60460410	Coupler, joint shaft
9	63062310	Bearing Plate, joint shaft
10	07585120	Wood Bonnet Ass'y
11	07520800	Knob, input selector SW
12	50485300	Masking Sheet (A), input selector
13	07520700	Knob, master VR
14	07595200	Masking Sheet (C), master VR

Parts List <Top View>

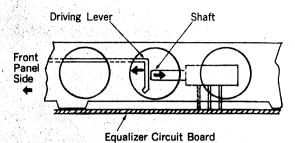
Parts No.	Stock No.	Description	
1	38004700	Power Cord	
2	39106000	Strain Relief 4 p	
3	07217500	AC Outlet	
4	07203600	8P Speaker Terminal	
5	22006500	4P Input Terminal, tape-2	
6	22006200	4P Input Terminal, tuner, aux	
7	22006300	4P Input Terminal, phorp-1/2	
8	22006500	4P Input Terminal, tape:	
9	22301900	Ground Terminal	
pC1	00386000	0.01μF 150V C.C.	
mC2	07259200	12000µF 71∨ E.C.	
mC3	07259200	12000µF 71∨ E.C.	
pS1	07259400	Push Switch, power	
mT1	15000601	Power Transformer	





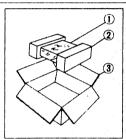
7. ATTACHMENT OF EQUALIZER CIRCUIT BOARD

- Push in each shaft of phono selector and MC gain switch on the equalizer circuit board.
- Keep pushing two driving levers with screw driver to front panel side. Then attach the board to chassis and tighten with mounting screws
- After this teplacement, check if the push switches function properly.



8. PACKING LIST

Parts No.	Stock No.	Description	
1	91167910	Vinyl Cover	
2	07641100	Styrofoam Packing	
3	07596200	Carton Case	



9. ACCESSORY PARTS LIST

Stock No.	Description	
07643800	Operating Instruction	